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COMMODITY DRAIN ON COMMERCIAL FORESTS in OREGON AND WASHINGTON 1948

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DIVISION OF FOREST ECONOMICS
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FOREWORD

The Forest Survey is a Nation-wide activity of the Forest Service authorized by the McSweeney-McNary Forest Research Act of 1928. The fivefold purpose of the Forest Survey is: (1) To make an inventory of the extent and condition of forest lands and of the present supply of timber and other forest products on these lands; (2) to ascertain the rate at which this supply is being increased through growth, and the potential growth on forest areas; (3) to determine the extent of drain on the forests through cutting and through loss from fire, insects, disease, windthrow, and other causes; (4) to determine the present consumption and the probable future trend in requirements for timber and other forest products; and (5) to analyze and correlate these findings with other economic data, as an aid in the formulation of private and public policies for most effective and rational use of land suitable for forest production.

The Forest Survey is conducted in the various forest regions of the Nation by the regional forest experiment stations of the Forest Service. In the Pacific Northwest region of Oregon and Washington it is conducted by the Pacific Northwest Forest and Range Experiment Station at Portland, Oregon. Initial forest inventory and growth and drain surveys of the region were made during the period 1930-36 and results of them were released in statistical and analytical publications. Since 1936, Forest Survey work in the region has been on a maintenance basis through periodic reinventories of the forest resource and resurveys of the volume of growth and drain. Recent drain surveys were made in 1944, as part of the Nation-wide Reappraisal Project, and in 1948. Results of the 1948 survey are presented in this publication.

In order to show drain statistics for all of the State of Washington, those for the six counties in the northeastern portion which are in Forest Service Region 1--Ferry, Lincoln, Pend Oreille, Spokane, Stevens, and Whitman--have been included.

COMMODITY DRAIN ON COMMERCIAL FORESTS IN OREGON AND WASHINGTON, 1948

By

F. L. Moravets

INTRODUCTION

Statistics on the rate at which the forest resource of the Pacific Northwest region of Oregon and Washington is being depleted through production of the various primary timber products are useful in a number of ways. First, they may be contrasted with statistics on the rate at which the resource is being replenished through forest growth in order to determine trends in the forest situation of the region as a whole or in either of the two states. Second, they are useful to forest-land owners, forest industries, public agencies, and foresters in general in forest-management and forest-industry planning. Third, statistics on production of each of the timber products in showing the extent and trend of production serve as an index of business conditions generally in this region.

Drain due to the production of timber products may be divided into two parts: cutting drain and logging waste. Cutting drain is the volume of timber, measured either in board feet or cubic feet, cut and removed from the woods in the form of logs, poles, piling, etc.; logging waste is the volume of timber cut or killed in falling or skidding operations that is left in the woods. Combined, the volume of cutting drain and logging waste may be spoken of as commodity drain. In this survey, commodity drain has been determined on the net volume of primary growing stock 1/ and also on the net saw-timber volume. 2/ It was determined only for live timber cut on commercial forest land. 3/

1/ Primary growing stock. Net volume, in cubic feet, of live saw-timber trees and live pole-timber trees from stump to a minimum 4.0-inch top, inside bark.

Saw-timber trees. Trees 11.0 inches d.b.h. and larger containing at least one merchantable 16-foot log, and in which at least one-third of the board-foot volume is free of rot and defect.

Pole-timber trees. Trees 5.0 to 10.9 inches d.b.h. in which at least one-third of the cubic-foot volume is free of rot and defect.

2/ Saw-timber volume. Net volume in feet board measure of saw-timber trees of all species to a merchantable top.

3/ Commercial forest land. Forest land which is producing, or is physically capable of producing, usable crops of wood, economically available now or prospectively, and not withdrawn from timber utilization.

Primary timber products included in the commodity drain survey were:

Logs: sawlogs, veneer logs and bolts, cooperage logs and bolts, pulpwood logs, and shingle logs and bolts.

Pulpwood: 4- and 8-foot bolts.

Fuelwood.

Piling.

Poles.

Posts: round and split.

Round mine timbers.

Miscellaneous: excelsior bolts, mine lagging, trawler poles, car stakes, hop poles, and hop pegs.

In the course of the survey the volume of production of each of the above timber products was obtained both in the standard unit of measurement common to the product, and in cubic feet. This volume may be termed commodity production and is defined as the total output of a product from both live and dead timber.

DRAIN SURVEY PROCEDURE

The survey of commodity drain on the live-timber inventory in the Pacific Northwest region was conducted during 1949. The data collected for nearly all of the timber products were for calendar year 1948; for a few the data represent an annual average for a recent period of years. As the products varied greatly in volume produced and in type and number of producers, several different survey procedures were employed. For the important products a 100-percent canvass of all recorded producers was made; for the minor ones, an empirical estimate was based on all available information.

Data on drain due to the production of the chief timber product of the region--logs, consumed in the manufacture of lumber, plywood and veneer, pulp, cooperage, and shingles--were obtained as follows: For Oregon total volume of logs removed, by county, was based on records of production in 1948 collected by the State Forester's office on private, State, county, and Federal revested grant lands; by the Forest Service on national forest lands, and by the Indian Service on Indian lands. Species composition of the log volumes shown for 1948 is based on production statistics for 1946 collected in a 100-percent mail canvass and field follow-up of nonresponding producers. For Washington volume of logs removed, by county and species, is based on a 100-percent mail canvass by the Forest Service of recorded producers supplemented by a field follow-up of large nonresponding producers and a field sampling follow-up of small nonrespondents.

After the production data for logs were obtained, determination of total commodity drain on the inventory was accomplished by application of a logging-waste factor to the volume of logs removed. This factor was derived from the adjustment of results of a survey of logging residuals on operations throughout the region made in 1945 as part of the Nation-wide forest Reappraisal Project. The 1945 survey collected data on a total of 644 one-quarter-acre plots well distributed throughout the region--295 in the Douglas-fir subregion and 349 in the ponderosa pine subregion. Logging operations were sampled on private, national forest, State, Indian, and Federal revested grant lands. Operations were stratified by size class: 1 to 14 million board feet of annual cut, 15 to 49 million, and 50 million and larger. Three to five plots were taken on each operation sampled and before slash disposal. The volumes of unused material in the woods disclosed by the survey were adjusted to Forest Survey inventory standards and to the intensity of utilization prevailing in 1948.

The volume of pulpwood in the form of 4- and 8-foot bolts cut in the region was obtained through a 100-percent response to a mail canvass of consumption of this type of material during 1948 by each of the pulp plants.

A mail canvass of production in 1948 of poles and piling was made of all known producers in the region. However, returns of this canvass were incomplete and field follow-up of the larger nonresponding producers was made. Total reported production was then adjusted for estimated production of small nonresponding producers on basis of estimates, by several of the key concentrators of poles and piling, of total production during the year.

As practically all of the fuelwood cut from live timber in the region is produced on a large number of small part-time operations, chiefly by individual farmers and local woodsmen, a mail canvass or intensive field sample was considered impractical in view of the relatively small total volume of drain involved. Therefore, an empirical estimate of production was compiled, based on the latest Bureau of Census statistics on type of cooking and heating fuel used in each of the classifications of dwellings--rural, nonfarm, and urban--and on estimates of the county agricultural agents, extension foresters, and others. In using the Bureau of Census statistics factors of estimated average annual consumption of fuelwood per dwelling and percent of fuelwood cut from live timber were applied.

As in the case of fuelwood, the production of fence posts in the region is very largely by a great number of farmers and local woodsmen on small, widely-scattered, part-time operations. Also, the relative volume of drain on the live-timber resource is small. An empirical estimate was compiled on the basis of the estimated total number of fence posts in use in the region, the average length of life of a post, and the estimated percent of the annual replacements cut from live timber. Factors used in compilation of the estimate were based on ratio of length of fence line per acre of farm land, the ratio varying with size of farm. Average size of farm and total farm acreage by county were obtained from latest Bureau of Census statistics.

The volumes of timber products included under "miscellaneous"--excelsior, mine timbers and lagging, trawler poles, car stakes, and hop poles and hop pegs--were based very largely on empirical estimates. For example, the volume in hop poles and pegs was based on such factors as Bureau of Census statistics on acreage of hops in each of the two states, a calculated number of poles and pegs per acre, and an assumed length of life per pole or peg.

One of the results of the survey was the determination of commodity production of each timber product in cubic feet and in number of standard units. In the case of logs, the volume and number of units used each for lumber, veneer, cooperage, pulp, and shingles was determined. This determination was based on reported volume of manufacture of each of the items in 1948; calculations were then made of the volume of logs consumed in such manufacture. Adjustments were made for export

of logs from Oregon to Washington and also for import of logs into Washington from Idaho and Canada. In this region, in addition to the sawmills, the plywood and veneer plants, cooperage plants, pulp plants, and shingle mills obtain practically all of their raw material in the form of logs. Also, there is much exchange of logs between plants to obtain type or species of log required and much movement of logs across county and State lines, and for long distances. Because of these reasons mail or field canvasses of the volume of logs produced for each of the specified manufactured products are impractical.

In the survey, commodity drain on live saw-timber volume was computed in board feet, log scale, Scribner rule--the common board-foot rule used in this region in determining log-scale volume of saw timber or in logs. In presenting the statistics in the tables, however, the volume is also shown in board feet, International $\frac{1}{4}$-inch rule--the standard board-foot rule adopted by the Forest Service in the presentation of Nation-wide Forest Survey inventory, growth, and drain volume statistics.

DRAIN SURVEY FINDINGS

The total commodity drain on the live saw-timber inventory in Oregon in 1948 due to the production of timber products amounted to 8,991 million board feet, log scale, Scribner rule; in Washington the total was 4,962 million board feet (tables 1 and 2). Expressed in cubic volume the commodity drain on the primary growing stock in Oregon totaled 1,746 million cubic feet of which 1,736 million was on saw timber and 10 million on pole timber. In Washington commodity drain on primary growing stock totaled 978 million cubic feet of which 962 million was on saw timber and 16 million on pole timber.

In Oregon softwood species comprised 99.7 percent of the commodity drain on live saw-timber volume and hardwood species 0.3 percent; in Washington softwoods comprised 99 percent and hardwoods 1 percent.

Not all of the volume of commodity drain represents utilized material, however. In Oregon, 88 percent of the commodity drain on live saw-timber volume was comprised of cutting drain--the portion of the volume that is included in the actual timber product transported from the woods; 12 percent was left in the woods. In Washington, cutting drain comprised 90 percent of the commodity drain total and the unutilized material 10 percent. The unutilized drain volume is composed of sound material of salvable dimensions, included principally in broken chunks, top logs, long butts, and damaged or felled small understory trees. It was left in the woods following the initial logging operation. This is the type of material now being utilized in parts of the region through relogging operations, or on areas of close

initial utilization, by pulp plants and other wood industries that have plant and woods equipment for efficiently handling such irregular material.

Total commodity drain of live saw-timber volume in Oregon due to the cutting of logs--used in the manufacture of lumber, timbers and sawn ties, plywood and veneer, pulp, cooperage stock, and shingles--totaled 8,736 million board feet, log scale, Scribner rule, which was 97.2 percent of the total drain volume due to all timber products (table 3). In Washington, 4,610 million board feet or 92.9 percent of the total drain was due to log production (table 4). Logs comprised 96.5 percent of the total commodity drain on the primary growing stock in Oregon and 91.7 percent in Washington.

As by-products of the drain survey, statistics of production in 1948 were compiled for each timber product. These statistics for Oregon are shown in number of standard units and in cubic feet in table 5, and for Washington in table 6. Table 7 summarizes commodity production in Oregon and in Washington by timber-products class and size of timber from which cut. Log production from live timber in Oregon, by subregion and species is shown in table 8, and by county in table 10; table 9 shows log production in Washington by subregion and species, table 11 by county.

Tables 12 and 13 report the production of pulpwood cut in form of 4- and 8-foot bolts by species and county in Oregon and Washington, respectively. Table 14 gives production of poles and piling in Oregon and Washington by State, species, and size of timber from which cut.

Table 1.--Commodity drain of live saw-timber volume and primary growing stock on commercial forest land in Oregon by species group, 1948

Species group	Live saw-timber volume						Primary growing stock		
	Cutting drain	Logging waste	Commodity drain 1/	Cutting drain	Logging waste	Commodity drain 1/	Cutting drain	Logging waste	Commodity drain 1/
	Million board feet, log scale, Scribner rule			Million board feet, International $\frac{1}{4}$-inch rule			Million cubic feet		
Softwoods	7,897	1,064	8,961	9,020	1,217	10,237	1,542	196	1,738
Hardwoods	27	3	30	31	4	35	8	2/	8
Total	7,924	1,067	8,991	9,051	1,221	10,272	1,550	196	1,746

1/ Total of cutting drain and logging waste.

2/ Less than 500 thousand cubic feet.

Table 2.--Commodity drain of live saw-timber volume and primary growing stock on commercial forest land in Washington by species group, 1948

Species group	Live saw-timber volume						Primary growing stock		
	Cutting drain	Logging waste	Commodity drain 1/	Cutting drain	Logging waste	Commodity drain 1/	Cutting drain	Logging waste	Commodity drain 1/
	Million board feet, log scale, Scribner rule			Million board feet, International $\frac{1}{4}$-inch rule			Million cubic feet		
Softwoods	4,359	555	4,914	5,000	638	5,638	865	104	969
Hardwoods	44	4	48	51	4	55	8	1	9
Total	4,403	559	4,962	5,051	642	5,693	873	105	978

1/ Total of cutting drain and logging waste.

Table 3.--Commodity drain of live saw-timber volume and primary growing stock in Oregon, by timber-products class, 1948

Timber-products class	Live saw-timber volume		Primary growing stock	
	Volume in million board feet log scale Scribner rule	Percent	Volume in million cubic feet	Percent
Logs	8,736	97.16	1,685	96.51
Pulpwood 4- and 8-foot bolts	14	0.16	3	0.17
Poles and piling	74	0.82	18	1.03
Fuelwood	150	1.67	34	1.95
Fence posts	13	0.14	4	0.23
Miscellaneous	4	0.05	2	0.11
Total	8,991	100.00	1,746	100.00

Table 4.--Commodity drain of live saw-timber volume and primary growing stock in Washington, by timber-products class, 1948

Timber-products class	Live saw-timber volume		Primary growing stock	
	Volume in million board feet log scale Scribner rule	Percent	Volume in million cubic feet	Percent
Logs	4,610	92.91	897	91.72
Pulpwood 4- and 8-foot bolts	106	2.14	21	2.15
Poles and piling	32	0.64	10	1.02
Fuelwood	194	3.91	42	4.29
Fence posts	14	0.28	4	0.41
Miscellaneous	6	0.12	4	0.41
Total	4,962	100.00	978	100.00

Table 5.--Commodity production by timber products [1] in cubic volume and in standard units in Oregon, 1948

Timber products class	Quantity		
	Cubic volume	Standard units	
		Unit	Number
	M cubic feet		
Sawlogs (for lumber, timbers, and sawn ties)	1,603,634	M board feet [2]	8,181,807
Veneer logs and bolts	131,218	M board feet [2]	690,619
Cooperage logs and bolts	10,925	M board feet [2]	57,500
Pulpwood logs	111,946	M board feet [2]	583,050
Shingle logs and bolts	13,110	M board feet [2]	65,550
Pulpwood bolts	3,161	Standard cords [3]	37,111
Fuelwood	49,950	Standard cords [3]	555,000
Chemical wood	--	Standard cords [3]	--
Piling	3,325	Linear feet	5,026,364
Poles	15,185	Pieces	455,490
Posts (round and split)	5,322	Pieces	4,491,623
Hewn ties	--	Pieces	--
Round mine timbers	670	Pieces	1,000
Miscellaneous [4]	996	Cubic feet	996,000
Total all products	1,949,442		

1/ From live and dead timber.

2/ International $\frac{1}{4}$-inch rule.

3/ Standard cords (4'x4'x8') rough wood, unpeeled.

4/ Includes excelsior bolts, mine lagging, trawler poles, car stakes, and hop poles and pegs.

Table 6.--Commodity production by timber products [1] in cubic volume and in standard units in Washington, 1948

Timber products class	Quantity		
	Cubic volume	Standard units	
		Unit	Number
	M cubic feet		
Sawlogs (for lumber, timbers, and sawn ties)	614,781	M board feet [2]	3,136,640
Veneer logs and bolts	43,834	M board feet [2]	230,707
Cooperage logs and bolts	1,530	M board feet [2]	8,050
Pulpwood logs	207,360	M board feet [2]	1,080,000
Shingles, logs and bolts	52,440	M board feet [2]	262,200
Pulpwood bolts	21,298	Standard cords [3]	247,657
Fuelwood	64,890	Standard cords [3]	721,000
Chemical wood	--	Standard cords [3]	--
Piling	404	Linear feet	606,031
Poles	10,191	Pieces	372,196
Posts (round and split)	5,583	Pieces	4,675,604
Hewn ties	--	Pieces	--
Round mine timbers	2,077	Pieces	3,100
Miscellaneous [4]	1,631	Cubic feet	1,631,000
Total all products	1,026,019		

1/ From live and dead timber.

2/ International $\frac{1}{4}$-inch rule.

3/ Standard cords (4'x4'x8') rough wood, unpeeled.

4/ Includes excelsior bolts, mine lagging, trawler poles, car stakes, and hop poles and pegs.

Table 7.--Commodity production from live saw timber and pole timber on commercial forest land in Oregon and Washington by timber-products class and State, 1948

State	Total	Logs	Pulpwood	Poles and piling	Fuelwood	Fence Posts	Miscellaneous 1/
	Material cut from saw-timber trees						
	Thousand board feet, log scale, Scribner rule						
Western Oregon	6,710,740	6,495,775	13,486	73,630	118,486	5,063	4,300
Eastern Oregon	1,212,834	1,173,128	27	--	31,744	7,845	90
Total Oregon	7,923,574	7,668,903	13,513	73,630	150,230	12,908	4,390
Western Washington	3,709,665	3,454,008	104,718	22,068	120,903	2,908	5,060
Eastern Washington	693,421	597,047	1,155	9,620	72,863	11,656	1,080
Total Washington	4,403,086	4,051,055	105,873	31,688	193,766	14,564	6,140
Total region	12,326,660	11,719,958	119,386	105,318	343,996	27,472	10,530
	Material cut from pole-timber trees						
	Thousand cubic feet						
Western Oregon	8,088	--	819	1,142	5,332	50	745
Eastern Oregon	2,336	--	18	98	1,428	700	92
Total Oregon	10,424	--	837	1,240	6,760	750	837
Western Washington	12,240	--	2,847	1,628	5,441	14	2,310
Eastern Washington	3,976	--	10	68	3,279	291	328
Total Washington	16,216	--	2,857	1,696	8,720	305	2,638
Total region	26,640	--	3,694	2,936	15,480	1,055	3,475

1/ Includes mine timbers and lagging, excelsior bolts, car stakes, trawler poles, and hop poles and pegs.

Table 8.--Log production from live timber on commercial forest land in Oregon by subregion and species, 1948

Species	Total		Western Oregon		Eastern Oregon	
	M bd. ft. log scale Scribner rule	M bd. ft. International ¼-inch rule	M bd. ft. log scale Scribner rule	M bd. ft. International ¼-inch rule	M bd. ft. log scale Scribner rule	M bd. ft. International ¼-inch rule
Softwoods:						
Douglas-fir	5,616,739	6,456,463	5,561,016	6,395,168	55,723	61,295
Ponderosa pine	1,133,536	1,250,462	71,453	82,171	1,062,083	1,168,291
Sugar pine	70,634	80,848	63,009	72,460	7,625	8,388
Western hemlock	443,935	510,525	443,935	510,525	--	--
Cedars	112,887	129,815	112,770	129,686	117	129
True firs	165,536	188,565	129,522	148,950	36,014	39,615
Sitka spruce	86,787	99,805	86,787	99,805	--	--
Western larch	8,564	9,420	--	--	8,564	9,420
Other	10,797	12,266	7,795	8,964	3,002	3,302
Total	7,649,415	8,738,169	6,476,287	7,447,729	1,173,128	1,290,440
Hardwoods:						
Red alder	16,370	18,826	16,370	18,826	--	--
Bigleaf maple	1,364	1,569	1,364	1,569	--	--
Black cottonwood	858	987	858	987	--	--
Other	896	1,030	896	1,030	--	--
Total	19,488	22,412	19,488	22,412	--	--
Total all species	7,668,903	8,760,581	6,495,775	7,470,141	1,173,128	1,290,440

Table 9.--Log production from live timber on commercial forest land in Washington by subregion and species, 1948

Species	Total		Western Washington		Eastern Washington	
	M bd. ft. log scale Scribner rule	M bd. ft. International ¼-inch rule	M bd. ft. log scale Scribner rule	M bd. ft. International ¼-inch rule	M bd. ft. log scale Scribner rule	M bd. ft. International ¼-inch rule
Softwoods:						
Douglas-fir	1,631,319	1,872,744	1,479,571	1,701,506	151,748	171,238
Ponderosa pine	318,141	361,104	--	--	318,141	361,104
Western hemlock	1,252,483	1,440,140	1,247,952	1,435,145	4,531	4,995
Cedars	353,443	406,162	345,424	397,238	8,019	8,924
True firs	238,788	273,899	217,518	250,146	21,270	23,753
Sitka spruce	130,502	150,077	130,498	150,073	4	4
Western larch	55,400	64,471	--	--	55,400	64,471
Other	45,226	51,010	7,534	8,664	37,692	42,346
Total	4,025,302	4,619,607	3,428,497	3,942,772	596,805	676,835
Hardwoods:						
Red alder	13,295	15,289	13,295	15,289	--	--
Bigleaf maple	4,956	5,700	4,956	5,700	--	--
Black cottonwood	7,447	8,567	7,205	8,286	242	281
Other	55	63	55	63	--	--
Total	25,753	29,619	25,511	29,338	242	281
Total all species	4,051,055	4,649,226	3,454,008	3,972,110	597,047	677,116

Table 10.--Log production from live timber on commercial forest land in Oregon by county, 1948

County	Thousand board feet log scale Scribner rule	Thousand board feet International $\frac{1}{4}$-inch rule
Western Oregon:		
Benton	205,242	236,028
Clackamas	362,936	417,376
Clatsop	163,117	187,585
Columbia	61,592	70,831
Coos	519,368	597,273
Curry	117,453	135,071
Douglas	1,108,560	1,274,844
Hood River	56,234	64,669
Jackson	577,679	664,331
Josephine	246,274	283,215
Lane	1,205,494	1,386,318
Lincoln	459,037	527,893
Linn	649,473	746,894
Marion	153,919	177,007
Multnomah	7,275	8,366
Polk	235,797	271,167
Tillamook	148,279	170,521
Washington	91,238	104,924
Yamhill	126,808	145,829
Total	6,495,775	7,470,142
Eastern Oregon:		
Baker	26,171	28,788
Crook	90,528	99,581
Deschutes	44,075	48,483
Grant	174,000	191,400
Harney	48,023	52,825
Jefferson	126,375	139,013
Klamath	313,424	344,766
Lake	83,166	91,483
Malheur	296	326
Morrow	34,054	37,459
Umatilla	47,837	52,621
Union	25,442	27,986
Wallowa	66,847	73,532
Wheeler	65,674	72,241
Wasco	27,216	29,938
Total	1,173,128	1,290,442
Total for State	7,668,903	8,760,584

Table 11.--Log production from live timber on commercial forest land in Washington by county, 1948

County	Thousand board feet log scale Scribner rule	Thousand board feet International ¼-inch rule
Western Washington:		
Clallam	325,513	374,340
Clark	21,226	24,410
Cowlitz	211,848	243,625
Grays Harbor	368,140	423,361
Island	7,892	9,076
Jefferson	120,806	138,927
King	217,525	250,154
Kitsap	12,186	14,014
Lewis	660,798	759,918
Mason	30,812	35,434
Pacific	536,141	616,562
Pierce	178,667	205,467
San Juan	820	943
Skagit	211,679	243,431
Skamania	112,016	128,818
Snohomish	140,383	161,440
Thurston	97,371	111,977
Wahkiakum	52,445	60,312
Whatcom	147,740	169,901
Total	3,454,008	3,972,110
Eastern Washington:		
Asotin, Columbia Garfield, and Walla Walla	7,770	8,547
Chelan	39,922	43,914
Ferry	44,082	52,017
Kittitas	51,173	56,290
Klickitat	80,254	88,279
Lincoln	3,948	4,659
Okanogan	84,798	93,277
Pend Oreille	59,463	70,166
Spokane	16,714	19,723
Stevens	130,127	153,550
Whitman	233	275
Yakima	78,563	86,419
Total	597,047	677,116
Total for State	4,051,055	4,649,226

Table 12.--Production of 4- and 8-foot pulpwood from live timber in Oregon by county and species, 1948

County	Total	Western hemlock	Douglas-fir	Sitka spruce	True firs	Lodgepole pine	Black cottonwood
	Cords	Cords	Cords	Cords	Cords	Cords	Cords
Benton	67	--	--	--	--	--	67
Clackamas	5,795	3,903	--	26	849	--	1,017
Clatsop	573	257	--	316	--	--	--
Columbia	21,903	903	20,926	--	74	--	--
Klamath	270	--	--	--	--	270	--
Lincoln	150	32	--	118	--	--	--
Linn	7	--	--	--	7	--	--
Marion	2,089	167	--	--	1,475	--	447
Multnomah	826	719	--	6	87	--	14
Polk	485	--	--	--	343	--	142
Tillamook	1,216	703	--	513	--	--	--
Wasco	22	22	--	--	--	--	--
Washington	3,447	161	3,241	--	45	--	--
Yamhill	261	--	--	--	261	--	--
Total	37,111	6,867	24,167	979	3,141	270	1,687

Table 13.--Production of 4- and 8-foot pulpwood from live timber in Washington by county and species, 1948

County	Total	Western hemlock	Douglas-fir	Sitka spruce	True firs	Black cottonwood
	Cords	Cords	Cords	Cords	Cords	Cords
Chelan	19	--	--	--	--	19
Clallam	53,231	20,966	24,165	101	7,405	594
Clark	1,174	200	--	--	168	806
Cowlitz	18,317	3,122	8,148	--	1,500	5,547
Grays Harbor	54,929	45,673	140	1,106	8,010	--
Jefferson	3,985	627	3,358	--	--	--
King	13,122	12,882	--	--	240	--
Lewis	12,071	10,896	815	--	360	--
Mason	600	600	--	--	--	--
Pacific	17,088	14,525	--	--	2,563	--
Pierce	15,910	13,870	--	--	1,440	600
Skagit	4,019	3,697	--	--	221	101
Skamania	2,776	1,535	--	--	425	816
Snohomish	31,185	30,502	--	--	--	683
Thurston	6,329	5,737	--	232	360	--
Wahkiakum	2,534	386	2,148	--	--	--
Whatcom	5,369	3,230	--	--	1,739	400
Total	242,658	168,448	38,774	1,439	24,431	9,566

Table 14.--Production of poles and piling from live timber in Oregon and Washington by State and species, 1948

Species	Cut from saw-timber trees		Cut from pole-timber trees	
	Number of pieces	Volume thousand board feet log scale	Number of pieces	Volume thousand cubic feet
		Oregon		
Douglas-fir	427,177	72,837	81,843	982
Western redcedar	5,206	793	14,588	160
Lodgepole pine	--	--	9,800	98
Total	432,383	73,630	106,231	1,240
		Washington		
Douglas-fir	131,099	19,002	103,150	1,238
Western redcedar	62,407	7,757	37,839	416
Lodgepole pine	12,410	1,303	2,000	20
Western larch	31,390	3,626	2,000	22
Total	237,306	31,688	144,989	1,696